U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

OFFICE OF NUCLEAR REACTOR REGULATION

12.5 OPERATIONAL RADIATION PROTECTION PROGRAM

REVIEW RESPONSIBILITIES

Primary - ~~Radiological Assessment Branch (RAB)~~Emergency Preparedness and Radiation Protection Branch (PERB)[1]

Secondary - None

I. AREAS OF REVIEW

The following areas of the applicant's safety analysis report (SAR) are reviewed, as they relate to the operational aspects of the radiation protection program:

A. Organization

1. The administrative organization of the radiation protection program, including the authority and responsibility of each position identified (preliminary safety analysis report, PSAR, ~~and~~ update in the final safety analysis report, FSAR or the combined license application[2]).

2. The experience and qualifications of the personnel responsible for the radiation protection program and for handling and monitoring radioactive material. Reference may be made to SAR Chapter 13 as appropriate (FSAR or combined license application[3]).

3. Information describing the implementation of Regulatory Guides 1.8, 8.2, 8.8, and 8.10. Information describing any proposed alternatives (PSAR and update in FSAR or combined license application[4]).

4. Review of qualifications, experience, and organization coordinated with the ~~Licensing Qualification Branch (LQB)~~Quality Assurance and Maintenance Branch (HQMB) and Human Factors Assessment Branch (HHFB).[5]

B. Equipment, Instrumentation, and Facilities

1. The criteria for selecting portable and laboratory technical equipment and instrumentation for performing radiation and contamination surveys, for in plant airborne radioactivity monitoring and sampling, for area radiation monitoring, and for personnel monitoring for normal operation, anticipated operational occurrences and accident conditions (PSAR and update in FSAR, design certification application, or combined license application[6]). Include the quantity of each type of instrument, taking into consideration that some instruments will be unavailable during calibration, maintenance, and repair.

2. The description of instrument storage, calibration, and maintenance facilities (PSAR and update in FSAR, design certification application, or combined license application[7]).

3. The description and location of the radiation protection facilities (including locker and shower rooms, personnel decontamination area, respiratory protective equipment, and other contamination control equipment and areas) and information describing how such facilities and services will allow male and female workers to receive the necessary protection against radioactive contamination (PSAR and update in FSAR, design certification application, or combined license application[8]).

4. The location of items in B1, 2, and 3 above and the description of types of detectors and monitors, sensitivity, range, and frequency and methods of calibration (FSAR, design certification application, or combined license application[9]).

5. Information describing the implementation of Regulatory Guides 8.4, 8.8, 8.9, and 8.26. Information describing any proposed alternatives.

C. Procedures

1. The description of physical and administrative measures for controlling access and stay time in radiation areas (FSAR or combined license application[10]).

2. The description of procedures and methods of operation for assuring that occupational radiation exposure (ORE) will be as low as is reasonably achievable (ALARA) (FSAR or combined license application[11]).

3. The description of methods, frequencies, and procedures for conducting radiation surveys (FSAR or combined license application[12]).

4. The description of the bases and methods for monitoring and control of surface contamination for personnel and equipment, including reporting practices for normal and accident conditions (FSAR or combined license application[13]).

5. The description of engineering controls to limit airborne radioactivity, and of methods and procedures for evaluating and controlling potential airborne radioactivity concentrations, special air sampling, and issuance and use of respiratory equipment (FSAR or combined license application[14]).

6. The description of radiation protection training and retraining programs (FSAR or combined license application[15]).

7. Information describing the implementation of Regulatory Guides 1.8, 8.2, 8.7, 8.8, 8.9, 8.10, 8.26, 8.27, and 8.29. Information describing any proposed alternatives (PSAR and update in FSAR, design certification application, or combined license application[16]).

II. ACCEPTANCE CRITERIA

The information provided in the SAR is acceptable if it meets the requirements of 10 CFR Part 50, 50.34, and if it contains sufficient information identified in Section 12.5 of Regulatory Guide 1.70, so that the relevant requirements of the regulations listed below are met. The relevant requirements are:

1. 10 CFR Part 19, §19.12 - "Instruction to workers," as it relates to workers entering restricted areas being kept informed as to the storage transfer, or use of radioactive materials or radiation in such areas, and instructed as to the risk associated with occupational radiation exposure, precautions, and procedures to reduce exposures and purpose and function of protective devices employed.

2. 10 CFR Part 20, ~~20.1(c) - "Purpose,"~~§20.1101, "Radiation Protection Programs," and the definition of ALARA in §20.1003[17] as it relates to persons involved in licensed activities making every reasonable effort to maintain radiation exposures as low as is reasonably achievable (ALARA).

3. 10 CFR Part 20, ~~20.101 - "Exposure of Individuals to Radiation in Restricted Areas,"~~§20.1201, "Occupational dose limits for adults,"[18] as it relates to design features, shielding, ventilation, monitoring, and dose assessment, for the purpose of controlling occupational radiation exposures to individuals in restricted areas.

4. 10 CFR Part 20, ~~20.103 - "Exposure of Individuals to Concentrations of Radioactive Materials in Restricted Areas,"~~§20.1201, "Occupational dose limits for adults," 20.1202, "Compliance with requirements for summation of external and internal doses," §20.1203, "Determination of external dose from airborne radioactive material," and §20.1204, "Determination of internal exposure,"[19] as they relate to design features, ventilation, monitoring, and dose assessment, for the purpose of controlling intake of radioactive materials in restricted areas.

5. 10 CFR Part 20, §20.1207, "Occupational dose limits for minors," as it relates to control of radiation doses received by minors.[20]

6. 10 CFR Part 20, ~~20.105 - "Permissible Levels of Radiation in Unrestricted Areas,"~~§20.1301, "Dose limits for individual members of the public," and §20.1302, "Compliance with dose limits for individual members of the public,"[21] as they relate to control of radiation doses to individuals in unrestricted areas.

7. 10 CFR Part 20, ~~20.201 - "Surveys,"~~§20.1501, "General,"[22] as it relates to performance of surveys to comply with the regulations in Part 20.

8. 10 CFR Part 20, ~~20.202 - "Personnel Monitoring,"~~§20.1501(c), "General," and §20.1502, "Conditions requiring individual monitoring of external and internal occupational dose,"[23] as they relate to requirements for providing appropriate personnel monitoring equipment to individuals who enter restricted areas.

9. 10 CFR Part 20, ~~20.203 and 20.204 - "Cautions, Signs, Labels Signals, and Controls,"~~§20.1601, "Control of access to high radiation areas," §20.1602, "Control of access to very high radiation areas," §20.1901, "Caution signs," §20.1902, "Posting requirements," §20.1903, "Exceptions to posting requirements," §20.1904, "Labeling containers," and §20.1905, "Exemptions to labeling requirements,"[24] as they relate to posting of radiation areas, high radiation areas, airborne radioactivity areas, and further indicators necessary to identify and quantify the presence of radioactive materials in an area.

10. 10 CFR Part 20, ~~20.205 - "Procedures for Picking Up, Receiving and Opening Packages,"~~§20.1906, "Procedures for receiving and opening packages,"[25] as it relates to appropriate handling of packages containing certain quantities of radioactive materials.

11. 10 CFR Part 20, ~~20.207 - "Storage of Licensed Materials,"~~§20.1801, "Security of stored material,"[26] as it relates to securing licensed materials against unauthorized removal from the place of storage.

12. 10 CFR Part 20, ~~20.401 - "Records of Surveys, Radiation Monitoring, and Disposal,"~~§20.2101, "General provisions," §20.2102, "Records of radiation protection programs," §20.2103 "Records of surveys," §20.2105, "Records of planned special exposures," §20.2106, "Records of individual monitoring results," and §20.2107 "Records of dose to individual members of the public,"[27] as they relate to maintaining of records or individuals who are provided with personnel monitoring equipment and who are exposed to radiation in restricted areas.

13. 10 CFR Part 20, ~~20.402 - "Reports of thefts or Loss of Licensed Material,"~~§20.2201 "Reports of theft or loss of licensed material,"[28] as it relates to reports to NRC required from licensees, immediately after becoming aware of any loss or theft of licensed material that may result in significant hazard to persons in unrestricted areas.

14. 10 CFR Part 20, ~~20.405 - "Reports of Overexposures and Excessive Levels and Concentrations,"~~§20.2203. "Reports of exposures, radiation levels, and concentrations of radioactive material exceeding the limits,"[29] as it relates to requirements for written reports to NRC concerning individual exposures in excess of regulatory limits, incidents requiring notification, and levels of radiation or concentrations of radioactive materials in excess of certain values.

15. 10 CFR Part 20, ~~20.408 - "Reports on Personnel Exposure on termination of Employment or Work,"~~§20.2206, "Reports of individual monitoring,"[30] as it relates to requirements for ~~exposure reports to terminated individuals and to the NRC following each such termination~~annual reporting of the results of individual monitoring.[31]

16. 10 CFR Part 50, §50.34(f)(2)(xxvii), as it relates to monitoring of in-plant radiation and airborne radioactivity for routine and accident conditions. Refer also to NUREG-0737 Section III.D.3.3 for additional detail and clarification of requirements.[32]

17. 10 CFR Part 50, Criteria 64 - "Monitoring Radioactivity Releases," as it relates to provision of appropriate monitoring for the reactor containment atmosphere and spaces containing components for recirculation of Loss-of-Coolant-accident fluids.

The following Regulatory Guides, NUREGs, and industry standards provide information, recommendations, and guidance, and in general describe a basis acceptable to the staff to implement the requirements of Parts 19, 20, and 50:

1. Regulatory Guide 1.8 "Personnel Selection and Training," as it relates to compliance with the Commission's regulations with regard to qualification of nuclear power plant personnel.

2. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operational)," as it relates to compliance with the Commission's quality assurance regulatory requirements during nuclear power plant operations.

3. Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," as it relates to compliance with the Commission's regulations to provide instrumentation to monitor plant variables and systems during and following an accident.

4. Regulatory Guide 8.2, "Guide for Administrative Practices in Radiation Monitoring," as it relates to general information on radiation monitoring programs for administrative personnel.

5. Regulatory Guide 8.3 - "Film Badge Performance Criteria," as it relates to film badge performance criteria for several categories of radiations following exposure under specified conditions.

6. Regulatory Guide 8.4, "Direct-Reading and Indirect-Reading Pocket Dosimeters," as it relates to standards for direct-reading and indirect-reading pocket dosimeters used for personnel dose or dose rate measurements.

7. Regulatory Guide 8.6, "Standard Test Procedure for Geiger-Mueller Counters," as it relates to testing the operating characteristics of Geiger-Mueller counters prior to making calibrations and measurements.

8. Regulatory Guide 8.7, "Occupational Radiation Exposure Records Systems," as it relates to specification of records necessary to describe The occupational radiation exposure of individuals, and the conditions under which the exposure may occur.

9. Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be as Low as is Reasonably Achievable," as it relates to meeting the requirements of 10 CFR Part 20~~.1(c)~~ §20.1101(b) and the definition of ALARA in §20.1003[33] by providing radiation protection information pertaining to actions taken during the design, construction, operation, and decommissioning to assure that occupational radiation exposures are kept ALARA.

10. Regulatory Guide 8.9, "Acceptable Concepts, Models, Equations, and Assumptions for a Bioassay Program," as it relates to appropriate concepts, models, equations, and assumptions to be used in determining the extent of an individual's exposure to concentrations of radioactive materials.

11. Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures as Low as is Reasonably Achievable," as it relates to meeting the requirements of 10 CFR Part 20~~.1(c)~~ §20.1101(b) and the definition of ALARA in §20.1003[34] concerning the commitment by the applicant's management and vigilance by the Radiation Protection Manager and the radiation protection staff to maintain occupational radiation exposures ALARA.

12. Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure," as it relates to description of instruction to be provided concerning biological risks to embryos or fetuses, resulting from prenatal occupational radiation exposure.

13. Regulatory Guide 8.14, "Personnel Neutron Dosimeters," as it relates to the use of personnel neutron dosimeters where exposure to neutrons occurs.

14. Regulatory Guide 8.15, "Acceptable Programs for Respirator Protection,"[35] as it relates to elements of acceptable respiratory protection programs.

15. Regulatory Guide 8.20, "Application of Bioassay for I-125 and I-131," as it relates to the development and implementation of a bioassay program for any licensee handling or processing I-125 or I-131.

16. Regulatory Guide 8.26 "Applications of Bioassay for Fission and Activation Products," as it relates to bases used by NRC staff in evaluating the need for license provisions on bioassay programs where workers may be subject to internal radiation exposure from the inhalation or ingestion of fission or neutron activation products.

17. Regulatory Guide 8.27 "Radiation Protection Training for Personnel at Light-Water-Cooled Nuclear Power Plants," as it relates to a radiation protection training and retraining program consistent with the ALARA objective and acceptable to the NRC staff for meeting the training requirement of 10 CFR Part 19.

18. Regulatory Guide 8.28 "Audible Alarm Dosimeters," as it relates to appropriate use of audible alarm dosimeters, and conditions under which they should not be relied upon to perform their intended function.

19. Regulatory Guide 8.29 "Instruction Concerning Risks from Occupational Radiation Exposure," as it relates to providing appropriate instruction on the risks associated with occupational radiation exposure to individuals who are to be exposed, acceptable to the NRC staff for meeting the training requirement of 10 CFR Part 19.

20. Regulatory Guide 8.34 "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses," as it relates to criteria acceptable to the NRC staff that may be used by licensees to determine when monitoring is required, and methods acceptable to the NRC staff for calculating occupational doses when intake is known.[36]

21. Regulatory Guide 8.35 "Planned Special Exposures," as it relates to guidance on the conditions and prerequisites for permitting planned special exposures, and allowed by 10 CFR Part 20, the associated specific monitoring and reporting requirements.[37]

22. Regulatory Guide 8.36 "Radiation Doses to Embryo/Fetus," as it relates to determination of the total radiation dose to the embryo/fetus as the sum of the deep-dose equivalent to, and dose to the embryo/fetus from, intakes of the declared pregnant worker.[38]

23. Regulatory Guide 8.38 "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants," as it relates to guidance on acceptable methods to control access to high and very high radiation areas in nuclear power plants that follows the requirements specified in 10 CFR Part 20.[39]

24. NUREG 0041, "Manual of Respiratory Protection Against Airborne Radioactive Materials," as it relates to provision of technical information to licensees on the appropriate application of respiratory protective devices for protection against airborne radioactive materials, including selection and maintenance of equipment, and training of personnel.

25. NUREG-0731 "Guidelines for Utility Management Structure and Technical Resources," as it relates to appropriate staffing levels and technical expertise considered essential within a utility to support nuclear power plant operation properly.

26. ~~NUREG-0718 and 0737 "Task Action Plan Item III.D.3.3," as they relate to identification of specific action items, and information about schedules, applicability, method of implementation review, and clarifications of technical positions.~~[40]

26. ANSI/ANS 3.1 - 1978, "Selection and Training of Nuclear Power Plant Personnel,"[41] as it relates to criteria for selection, qualifications, responsibilities, and training of personnel in operating and support organizations, appropriate for the safe and efficient operation of nuclear power plants.

27. ~~ANSI N 13.2 - 1969~~ANSI N 13.2 - 1969 R88[42], "Guide for Administrative Practices in Radiation Monitoring," as it relates to guidance for administrative practices associated with monitoring of ionizing radiation in and around installations with a potential for radiation exposure.

28. ~~ANSI N 13.5 - 1972~~ANSI N 13.5 - 1972 R89[43], "Performance Specifications for Direct-Reading and Indirect-Reading Pocket Dosimeters for X- and Gamma Radiation," as it relates to definition of essential performance characteristics of direct and indirect reading pocket-type radiation detectors.

29. ~~ANSI N 13.6 - 1972~~ANSI N 13.6 - 1972 R89[44], "Practice for Occupational Radiation Exposure Record Systems," as it relates to guidance to the employer for the systematic generation and retention of records relating to occupational radiation exposure.

30. ANSI N 13.7 - 1972, "Criteria for Film Badge Performance,"[45] as it relates to film badge performance criteria for several categories of radiation, following exposure under specified conditions.

31. ANSI N 42.3 - 1969, "Test Procedure for Geiger-Mueller Counters,"[46] as it relates to guidance on specification of test conditions, such as associated electronic circuitry, environment, counting rate, to assure that operating characteristics can be appropriately evaluated.

Specific criteria necessary to meet the Commission's regulations, regulatory guides, and industry standards identified above are as follows:

A. Organization

Acceptance will be based on a determination that the organization described, along with the duties, qualifications, and training of the individuals responsible for assuring that ORE will be ALARA are in accordance with 10 CFR Part 20, ~~Section 20.1(c)~~§20.1101(b) and the definition of ALARA in §20.1103[47], Regulatory Guides 1.8, 8.2, 8.8, and 8.10, and 10 CFR Part 19, Section 19.12, and within the limits of 10 CFR Part 20, ~~Sections 20.101, 20.103, and 20.105~~§20.1201, §20.1202, §20.1203, §20.1204, §20.1301, and §20.1302[48], NUREG-0731, and NUREG-0761. Alternatives will be evaluated on the basis of a comparison with the referenced regulatory guides.

B. Equipment, Instrumentation, and Facilities

Acceptance will be based on a determination that:

1. The radiochemistry laboratory is equipped to perform routine analyses required for personnel protection, surveys, and related radiation protection functions, in accordance with 10 CFR Part 20, ~~Section 20.201~~§20.1501[49].

2. The counting room (low background) has the necessary instrumentation to perform routine counting on all plant radioactivity samples (water, air, swipes, etc.) in conformance with 10 CFR Part 20, ~~Section 20.201~~§20.1501[50], and General Design Criterion 64. Counting room equipment normally includes the following:

   (a) Multi-channel gamma pulse height analyzer.

   (b) Low background alpha-beta proportional counter and gamma and alpha-beta scintillation counters.

   (c) End window G-M type counter.

3. Portable instruments for measuring radiation or radioactivity in accordance with 10 CFR Part 20, ~~Section 20.201~~§20.1501[51] normally include:

   (a) Low and high range ion chamber rate meters (see Regulatory Guide 1.97 for ranges).

   (b) Portable G-M counters.

   (c) Alpha scintillation or proportional counter rate meters.

   (d) Neutron dose equivalent rate meters.

   (e) Air samplers for use with particulate filters and iodine collection devices (such as charcoal cartridges or equivalent filters) and airborne radioactivity monitors.

   (f) High range instruments, in accordance with Regulatory Guide 1.97.

4. Personnel monitoring instruments in accordance with 10 CFR Part 20, ~~Sections 20.201 and 20.202~~§20.1501 and §20.1502[52] to include:

   (a) Friskers for detecting radioactive contamination.

   (b) Self-reading low and intermediate pocket dosimeters, including audible alarm dosimeters (for early evaluation of individual doses). Performance and other requirements shall conform to Regulatory Guides 8.4, 8.14, and 8.28 or to appropriate proposed alternatives.

   (c) Count rate meters or personnel air samplers to be worn on protective clothing.

(d) Film badges and/or thermoluminescent dosimeters (TLD) in conformance with Regulatory Guide 8.3.

(e) Provisions for bioassay and whole body counting to meet the requirements of 10 CFR Part 20, ~~Section 20.103~~§20.1201, §20.1202, §20.1203, and §20.1204[53] and Regulatory Guides 8.9 and 8.26 or to appropriate proposed alternatives.

5. Utility-issued personnel protection equipment to be included:

(a) Anti-contamination clothing.

(b) Plastic suits for liquid contamination control.

(c) Head covers, shoe covers, gloves, and safety-related items.

(d) Pressure demand full-face-piece air line respirators.

(e) Pressure demand full-face-piece self-contained breathing apparatus.

(f) Full-face mechanical filter respirators.

(g) Respiratory protection equipment should meet the requirements of 10 CFR Part 20, ~~Section 20.103~~§20.1201, §20.1202, §20.1203, and §20.1204[54].

6. As a minimum the following radiation protection support facilities or areas to be provided:

(a) Portable instrument calibration and storage area. The latter should be easily accessible.

(b) Personnel decontamination area with necessary monitoring equipment. This facility should be located and designed to expedite rapid cleanup of male and female personnel and should not be used as a multiple purpose area.

(c) Facility and equipment to clean, sanitize, repair, and decontaminate personnel protective equipment, monitoring instruments, respirators, etc.

(d) A change room.

(e) Control points for entrance or exit into controlled access areas of the plant, condition signs, labels, and signals, in accordance with 10 CFR Part 20, ~~Sections 20.203 and 20.204~~§20.1601, §20.1602, §20.1901, §20.1902, §20.1903, §20.1904, and §20.1905[55].

(f) Storage and control capability for licensed materials in unrestricted areas, in accordance with the 10 CFR Part 20, ~~Sections 20.205 and 20.207~~§20.1801 and §20.1906[56].

(g) One or more radiation protection stations, which may be used as locations for portable radiation survey equipment, respiratory protective equipment, personnel monitoring equipment, and contamination control supplies. The equipment should be readily accessible and the stations should be equipped to facilitate communication throughout the plant.

Acceptance will also be based on implementation of the guidance of Regulatory Guide 8.8 or the provision of acceptable alternatives.

C. Procedures

Plans and procedures will be acceptable if they meet the criteria provided in 10 CFR Part 20, ~~Section 20.203~~§20.1601 and §20.1602[57] or STS for access control, and in Regulatory Guides 1.33, 1.8, 8.8, and 8.10 or proposed appropriate alternatives. There should be provision for a special control procedure for any area zoned 4 or higher, including a special survey of the area before entry, and the development of a radiation work permit program. The work permit program should include the following: data on radiation levels in the area, allowable working time, protective clothing and respiratory protective equipment, special tools, portable shielding, and special personnel monitoring devices. Operation, maintenance, repair, surveillance, and refueling procedures and methods used by the applicant should be reviewed to assure that occupational radiation exposures will be ALARA and in accordance with Regulatory Guide 8.8. For major dose accumulating functions, a post-operation review should be conducted to evaluate the effectiveness of the work permit program in assuring that occupational radiation exposures (ORE) will be as low as is reasonably achievable (ALARA) in future similar activities. Quality assurance criteria and inspections should be provided for the radiation procedures identified in Regulatory Guide 1.33, in accordance with 10 CFR Part 50, Appendix B. There should be provisions for supervision and control of the handling or movement of material within and from radiation or controlled access areas, and procedures for controlling the speed of radioactive materials. Acceptance criteria for contamination control limits are being developed. There shall also be provisions for personnel monitoring procedures, bioassay, keeping records of and reporting of personnel doses. 10 CFR Part 20, ~~Sections 20.102, 20.201, 20.401, 20.402, 20.405, 20.407, and 20.408~~§20.1601. §20.1602, §20.2101, §20.2102, §20.2103. §20.2104, §20.1205, §20.2106, §20.2107, §20.2201, §20.2203, and §02.2306[58]. provide the criteria for radiation surveys, personnel monitoring, bioassay, record keeping, and reporting. Guidance regarding these areas is provided by Regulatory Guides 8.2 (surveys and personnel monitoring), 8.3 (personnel monitoring equipment), 8.9 and 8.26 (bioassay), and 8.2, 8.7 (record keeping and reporting), 8.8 (decontamination, inspection, radiation protection program, and operations), 8.13 (training on radiation risks to fetuses), 8.27 (radiation protection training), 8.29 (training on radiation risks), and by NUREG-0761.

The acceptability of the radiation protection program will also be based on provisions for the indoctrination and personnel training and retraining programs. Regulatory Guides 1.8, 8.8, 8.10, and 8.27. 10 CFR Part 19, Section 19.12 requires instruction of personnel on radiation

protection. There should be a regular review of the radiation protection program, which should include updating procedures, equipment, and facilities where improvements are possible. The program should include regular audits to determine where occupational radiation exposures are occurring and to review possible methods for reducing these exposures.

Using the methods listed in ~~Section III.D.3.3 of NUREG-0718~~10 CFR Part 50, §50.34(f)(2)(xxvii) and additional guidance from Section III.D.3.3 of NUREG-0718[59], applicants for CPs should provide preliminary design information concerning monitoring inplant radiation and airborne radioactivity for a broad range of routine and emergency conditions. The monitors should meet the criteria of Regulatory Guide 1.97.

Using the methods listed in ~~Section III.D.3.3 of NUREG-0737~~10 CFR Part 50, §50.34(f)(2)(xxvii) and additional guidance from Section III.D.3.3 or NUREG-0737[60], applicants for OLs and Combined Operating Licenses[61] shall describe the equipment, training, and procedures to measure accurately the radioiodine concentration in areas within the plant where plant personnel may be present during an accident.

Utility management structure and technical lessons will be acceptable if they meet the criteria provided in Regulatory Guide 8.8 and NUREG-0731.

Technical Rationale[62]

The technical rationale for application of the above acceptance criteria is discussed in the following paragraphs.[63]

1. Compliance with 10 CFR Part 19, §19.12 requires that workers in restricted areas be kept informed of radiation levels, be instructed in health problems associated with exposure to radiation, be instructed in precautions to minimize exposure to radiation, be instructed to report violations of Commission regulations, and be instructed in response to warnings of an unusual occurrence.

   The SRP 12.5 relates to review and approval of the radiation protection program that is required to be implemented at all nuclear power plants. It covers the administration of the program, the qualifications of radiation protection personnel, the equipment and facilities that support the radiation protection program, and the operating and administrative procedures that must be in place. The requirements imposed by 10 CFR Part 19, §19.12, instructions provided to individuals who work in restricted areas, are one aspect of the overall radiation protection program at a nuclear plant site.

   Meeting the requirements of 10 CFR Part 19, §19.12 provides a level of assurance that radiation doses to individuals who work in restricted areas will be limited to the lowest practicable level because §19.12 requires that the workers themselves be stakeholders in maintaining low levels of radiation doses.[64]

2. The referenced sections of 10 CFR Part 20 relate to the administration of the radiation protection program to be used in the operation of a nuclear power plant.

The referenced sections of 10 CFR Part 20 specify in detail the administrative procedures including maintaining radiation doses ALARA, design features, shielding, and monitoring to control occupational radiation exposures, doses in unrestricted areas, performance of surveys, posting radiation areas, packaging and storage of radioactive material, and maintaining records of and reporting radiation exposures, and therefore apply to this SRP.

Meeting the requirements of the referenced sections of 10 CFR Part 20 will provide a level of assurance that exposure to radioactivity will be controlled such that individual workers will only receive radiation doses that are ALARA and therefore, will not exceed the limits specified in 10 CFR Part 20.[65]

3. The NRC regulation 10 CFR Part 50, §50.34(f)(2)(xxvii) relates to monitoring of in-plant radiation and airborne radioactivity for routine and accident conditions.

The SRP 12.5 relates to review and approval of the radiation protection program that is required to be implemented at all nuclear power plants. It covers the administration of the program, the qualifications of radiation protection personnel, the equipment and facilities that support the radiation protection program, and the operating and administrative procedures that must be in place. The requirements imposed by 10 CFR Part 50, §50.34(f)(2)(xxvii) are an integral part of the areas covered by SRP 12.5.

Meeting the requirements of 10 CFR Part 50, §50.34(f)(2)(xxvii) will provide a level of assurance that exposure to radioactivity will be monitored such that individual workers will not receive radiation doses that exceed the limits specified in 10 CFR Part 20.[66]

4. Compliance with GDC 64 requires that means be provided to monitor the atmosphere in areas in which components are located that potentially contain radioactive fluids and gases that may be released during normal operation, anticipated operational occurrences, and during accidents.

The subject of SRP 12.5 is the administrative controls that encompass the radiation protection program. The GDC 64 is applicable to SRP 12.5 because one part of the program is monitoring and surveillance of radiation areas during normal operation, anticipated operational occurrences, and following accidental releases of radioactive materials.

Meeting the requirements of GDC 64 will provide a level of assurance that releases of radioactive materials to the environment will be detected and resultant exposures will be ALARA and not exceed the limits specified in 10 CFR Part 20.[67]

III. REVIEW PROCEDURES

The information furnished in the SAR is reviewed for completeness in accordance with Regulatory Guide 1.70.

The reviewer evaluates the acceptability of areas discussed in subsection I by making the comparisons with criteria in the referenced regulations, regulatory guides, and industry standards. These can be summarized as follows:

1. The organizational position, functional responsibilities, experience, and qualifications of persons responsible for the radiation protection program. The plant organization, the functional responsibilities, and the qualifications of personnel are the primary responsibility of the ~~Licensee Qualification Branch~~Quality Assurance and Maintenance Branch, HQMB, and Human Factors Assessment Branch, HHFB[68], and are reviewed as part of Chapter 13. ~~RAB~~PERB[69] reviews the radiation protection organization, function, and personnel qualifications, in accordance with Regulatory Guides 1.8 and 8.8.

2. The equipment necessary to measure radioactivity, and radiation fields and exposures, including the number, type, range, sensitivity, calibration method and frequency, availability, and planned used of portable, fixed, laboratory, and personnel monitoring instrumentation, for all units on the site.

3. The health physics facilities and associated protective equipment for controlling ORE and contamination.

4. Description of methods for assuring development of the training, retraining, and indoctrination program and radiation protection instruction manuals.

5. The procedures to control storage and movement of radioactive material, to control exposures, and to control contamination.

Based on the review, the reviewer may request additional information or request the applicant to modify the submittal, in order to meet the acceptance criteria described in Section II.

For standard design certification reviews under 10 CFR Part 52, the procedures above should be followed, as modified by the procedures in SRP Section 14.3 (proposed), to verify that the design set forth in the standard safety analysis report, including inspections, tests, analysis, and acceptance criteria (ITAAC), site interface requirements and combined license action items, meet the acceptance criteria given in subsection II. SRP Section 14.3 (proposed) contains procedures for the review of certified design material (CDM) for the standard design, including the site parameters, interface criteria, and ITAAC.[70]

IV. EVALUATION FINDINGS

The staff's review should verify that sufficient information is contained in the SAR and amendments to arrive at conclusions of the following type, which are to be included in the staff's Safety Evaluation report. The report will include a summary of the applicant's submittal, the staff's basis for review and acceptance criteria, and the findings of the review.

The staff concludes that the operational radiation protection program is acceptable and meets the requirements of 10 CFR Part 19, Section 19.12; 10 CFR Part 20; and 10 CFR Part 50, Appendix A, General Design Criterion 64. This conclusion is based on the following findings:

The radiation protection program objectives are to provide reasonable assurance that the limits of 10 CFR Part 20, ~~Sections 20.101, 20.103, and 20.104~~§20.1201, §20.1202, §20.1203, §20.1204, and §20.1207[71] will not be exceeded, to reduce unavoidable exposures further, and to ensure that individual occupational radiation exposures are maintained as far below regulatory limits as is reasonably achievable, and that total person-rem doses are as low as is reasonably achievable, in accordance with 10 CFR Part 20, ~~Sections 20.1(c)~~§20.1101(b) and the definition of ALARA in §20.1003[72] and Regulatory Guides 8.8 and 8.10.

The duties of the plant (Radiation Protection Manager) include (list duties). The radiation protection organizations, qualifications, training of personnel, objectives of the program, and ways in which it will be implemented are in accordance with the guidelines of Regulatory Guides 1.8, 8.2, 8.8, 8.10, and 8.13, and with 10 CFR Part 19, Section 19.12, and NUREG-0731 are acceptable.

The radiation protection features at (plant name) include a (radiochemistry lab, personnel decontamination and emergency treatment areas, an access control point, counting room, calibration room, respirator testing facility, office, laundry, etc.). These facilities are sufficient to maintain occupational radiation exposures as low as is reasonably achievable and are consistent with the guidelines of ~~task action plan Item III.D.3.3 of NUREGs 0718 and 0737~~10 CFR Part 50, §50.34(f)(2)(xxvii) and NUREG-0737 Section III.D.3.3 which provides additional detail and clarification of requirements,[73] and with the provisions of Regulatory Guide 8.8.

Equipment to be used for radiation protection purposes includes portable radiation survey instruments, personnel monitoring equipment, fixed and portable area and airborne radioactivity monitors, laboratory equipment, air samplers, respiratory protective equipment, and protective clothing. The number and types of equipment to be used are adequate, meet the criteria of Regulatory Guide 1.97, and provide reasonable assurance that the applicant will be able to maintain occupational exposures as low as is reasonably achievable.

All permanent and temporary plant personnel will be assigned (beta-gamma thermoluminescent dosimeter badges or film badges) to be worn in restricted areas at all times. These badges will be processed (monthly), in accordance with Regulatory Guide 8.3, or more frequently if significant exposures are suspected. All personnel assigned (TLD or film badges) are also required to wear (direct or indirect) reading dosimeters when entering the controlled area. The readings from these dosimeters will be used to keep a running total of an individual's dose prior to TLD or film badge processing. Plant visitors wear self-reading dosimeters or are escorted by an individual wearing such personnel dosimetry devices. Appropriate caution signs, labels, and signals will be provided, in accordance with 10 CFR Part 20, ~~Sections 20.203 and 20.204~~§20.1601, §20.1602, §20.1901, §20.1902, §20.1903, §20.1904, and §20.1905[74]. Neutron film badges, neutron dosimeters, and alarming dosimeters will also be provided for personnel when necessary, in accordance with Regulatory Guide 8.14. Whole body counts of all plant personnel will be conducted on a scheduled basis and other bioassays will be provided when deemed necessary by the (Radiation Protection Manager), in accordance with 10 CFR Part 20~~.103~~, §20.1201, §20.1202, §20.1203, and §20.1204[75]. Records of surveys, personnel monitoring, and bioassay will be maintained in accordance with 10 CFR Part 20, ~~Sections 20.102, 20.201, 20.202, 20.401, 20.402, 20.405, 20.407, and 20.408,~~§20.1501, §20.1502, §20.1601. §20.1602, §20.2101, §20.2102, §20.2103. §20.2104, §20.1205, §20.2106, §20.2107,

§20.2201, §20.2203, and §20.2306[76] as well as Regulatory Guide 8.7. All radiation exposure information will be processed and recorded in accordance with 10 CFR Part 20.

Maintenance, repair, surveillance, and refueling procedures and methods used by the applicant are reviewed to assure that all plant radiation protection procedures, practices, and criteria have been considered, to assure that occupational radiation exposures will be ALARA and in accordance with Regulatory Guide 8.8. Procedures are also developed to assure that exposure limits are not exceeded by plant or visitor personnel onsite; to administer and control conditions of radiation work permits; to post radiation areas; to establish radiation access control zones; to control all radioactive material entering or leaving the plant site; and to train plant and visitor personnel in radiation protection policies and procedures and meet the quality assurance requirements of Regulatory Guide 1.33, with respect to 10 CFR Part 50, Appendix B.

Storage and control of licensed materials in unrestricted areas will be maintained in accordance with 10 CFR Part 20, ~~Section 20.203 and 20.207~~§20.1601, §20.1602, §20.1801, §20.1802, §20.1901, and §20.1902[77].

The utility management structure and technical resources meet the criteria provided in NUREG-0731, and are acceptable.

Based on the information presented in the (PSAR, FSAR, design certification application, or combined license application[78]) by the applicant, we conclude that the applicant intends to implement a radiation protection program that will maintain in-plant radiation exposures as far below the applicable limits of 10 CFR Part 20 as is reasonably achievable, and will maintain radiation exposures as low as is reasonably achievable.

For design certification reviews, the findings will also summarize, to the extent that the review is not discussed in other safety evaluation report sections, the staff's evaluation of inspections, tests, analyses, and acceptance criteria (ITAAC), including design acceptance criteria (DAC), site interface requirements, and combined license action items that are relevant to this SRP section.[79]

V. IMPLEMENTATION

The following is intended to provide guidance to applicants and licensees regarding the NRC staff's plans for using this SRP section.

This SRP section will be used by the staff when performing safety evaluations of license applications submitted by applicants pursuant to 10 CFR 50 or 10 CFR 52.[80] Except in those cases in which the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

The provisions of this SRP section apply to reviews of applications docketed six months or more after the date of issuance of this SRP section.[81]

Implementation schedules for conformance to parts of the method discussed herein are contained in the referenced regulatory guides and NUREGs.

VI. REFERENCES

1. 10 CFR Part 19, "Notices, Instructions, and Reports to Workers; Inspections."

2. 10 CFR Part 20, "Standards for Protection Against Radiation."

3. 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

4. Regulatory Guide 1.8, "Personnel Selection and training."

5. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operations)."

6. Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident."

7. Regulatory Guide 5.9, "Specifications of Ge (Li) Spectroscopy Systems for Radiation Protection Measurements -- Part 1: Data Acquisition.'

8. Regulatory Guide 8.2, "Guide for Administrative Practices in Radiation Monitoring."

9. Regulatory Guide 8.3, "Film Badge Performance Criteria."

10. Regulatory Guide 8.4, "Direct-Reading and Indirect-Reading Pocket Dosimeters."

11. Regulatory Guide 8.6, "Standard Test Procedures for G-M Counters."

12. Regulatory Guide 8.7, "Occupational Radiation Exposure Records Systems."

13. Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be as Low as is Reasonably Achievable."

14. Regulatory Guide 8.9, "Acceptable Concepts, Models, Equations, and Assumptions for a Bioassay Program."

15. Regulatory Guide 8.10, "Operational Philosophy for Maintaining Occupational Radiation Exposures as Low as is Reasonably Achievable."

16. Regulatory Guide 8.13, "Instruction Concerning Prenatal Radiation Exposure."

17. Regulatory Guide 8.14, "Personnel Neutron Dosimeters."

18. Regulatory Guide 8.15, "Acceptable Programs for Respiratory Protection."

19. Regulatory Guide 8.20, "Applications of Bioassay for I-125 and I-131."

20. Regulatory Guide 8.26, "Applications of Bioassay for Fission and Activation Products.'

21. Regulatory Guide 8.27, "Radiation Protection Training for Personnel at Light-Water-Cooled Nuclear Power Plants."

22. Regulatory Guide 8.28, "Audible Alarm Dosimeters."

23. Regulatory Guide 8.29, "Instruction Concerning Risks from Occupational Radiation Exposure."

24. Regulatory Guide 8.xx, "Control of Radioactive Surface Contamination on Material, Equipment, and Facilities to be Released for Uncontrolled Use.

25. Regulatory Guide 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses."

26. Regulatory Guide 8.35, "Planned Special Exposures."

27. Regulatory Guide 8.36, "Radiation Doses to Embryo/Fetus."

28. Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants."[82]

29. NUREG-0041, "Manual of Respiratory Protection Against Airborne Radioactive Materials."

30. NUREG-0731, "Guidelines for Utility Management and Technical Resources."

31. NUREG-0737, "Clarification of TMI-Action Plan Requirements."

32. ANSI/ANS 3.1-1978, "Selection and Training of Nuclear Power Plant Personnel."[83]

33. ANSI N13.2-1969 R88[84], "Guide for Administrative Practices in Radiation Monitoring."

34. ANSI N13.5-1972 R89[85], "Performance Specification for Direct-Reading and Indirect-Reading Pocket Dosimeters for X- and Gamma Radiation."

35. ANSI N13.6-1972 R89[86], "Practice for Occupational Radiation Exposure Record Systems."

36. ANSI N13.7-1972, "Criteria for Film Badge Performance."[87]

37. ANSI N42.3-1969, "Test Procedure for Geiger-Mueller Counters."[88]

SRP Draft Section 12.5
Attachment A - Proposed Changes in Order of Occurrence

Item numbers in the following table correspond to superscript numbers in the redline/strikeout copy of the draft SRP section.

Item	Source	Description
1.	Current PRB name and abbreviation	Editorial change made to reflect current PRB name, Emergency Preparedness and Radiation Protection Branch, and abbreviation, PERB.
2.	SRP-UDP update item	Added reference to combined license application.
3.	SRP-UDP update item	Added reference to combined license application.
4.	SRP-UDP update item	Added reference to combined license application.
5.	Current PRB name and abbreviation	Editorial change made to reflect current PRB names, Quality Assurance and Maintenance Branch, HQMB, and Human Factors Assessment Branch, HHFB.
6.	SRP-UDP update item	Added reference to design certification application and combined license application.
7.	SRP-UDP update item	Added reference to design certification application and combined license application.
8.	SRP-UDP update item	Added reference to design certification application and combined license application.
9.	SRP-UDP update item	Added reference to design certification application and combined license application.
10.	SRP-UDP update item	Added reference to combined license application.
11.	SRP-UDP update item	Added reference to combined license application.
12.	SRP-UDP update item	Added reference to combined license application.
13.	SRP-UDP update item	Added reference to combined license application.
14.	SRP-UDP update item	Added reference to combined license application.
15.	SRP-UDP update item	Added reference to combined license application.
16.	SRP-UDP update item	Added reference to design certification application and combined license application.
17.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.1(c) with 10 CFR Part 20 §20.1101 and the definition of ALARA in §20.1003.
18.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.101 with 10 CFR Part 20 §20.1201.
19.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.103 with 10 CFR Part 20 §20.1201, §20.1202, §20.1203, and §20.1204.

Item	Source	Description
20.	Editorial	Added reference to 10 CFR Part 20, §20.1207 for completeness since it is used in other parts of this SRP.
21.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.105 with 10 CFR Part 20 §20.1301 and §20.1302.
22.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.201 with 10 CFR Part 20 §20.1501.
23.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.202 with 10 CFR Part 20 §20.1501(c) and §20.1502.
24.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.203 and §20.204 with 10 CFR Part 20 §20.1601, §20.1602, §20.1901, §20.1902, §20.1903, §20.1904, and §20.1905.
25.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.205 with 10 CFR Part 20 §20.1906.
26.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.207 with 10 CFR Part 20 §20.1801.
27.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.401 with 10 CFR Part 20 §20.2101, §20.2102, §20.2103, §20.2105, §20.2106, and §20.2107.
28.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.402 with 10 CFR Part 20 §20.2201.
29.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.405 with 10 CFR Part 20 §20.2203.
30.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.408 with 10 CFR Part 20 §20.2206.
31.	Integrated Impact # 634	The requirement for reports on termination of employment is not specified in the revised version of 10 CFR Part 20, however the referenced §20.2206 requires annual reporting by licensees.
32.	SRP-UDP update item	Replaced reference to NUREG 0718 and 0737 with 10 CFR Part 50 §50.34(f)(2)(xxvii).
33.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.1(c) with 10 CFR Part 20 §20.1101 and the definition of ALARA in §20.1003.
34.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.1(c) with 10 CFR Part 20 §20.1101 and the definition of ALARA in §20.1003.
35.	Integrated Impact # 636	IPD 7.0 Form # 12.5-1 suggests revision of RG 8.15 to reflect respiratory protection requirements as specified in the revised 10 CFR Part 20.

Item	Source	Description
36.	Integrated Impact # 635	Included reference to RG 8.34, "Monitoring Criteria and Methods to Calculate Occupational Radiation Doses," in Acceptance Criteria.
37.	Integrated Impact # 635	Included reference to RG 8.35, "Planned Special Exposures," in Acceptance Criteria.
38.	Integrated Impact # 635	Included reference to RG 8.36, "Radiation Doses to Embryo/Fetus," in Acceptance Criteria.
39.	Integrated Impact # 635	Included reference to RG 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants," in Acceptance Criteria.
40.	SRP-UDP update item	Updated reference to 10 CFR Part 50, §50.34(f)(2)(xxvii), and moved to paragraph on regulatory requirements.
41.	Integrated Impact # 637	The reference to ANSI/ANS 3.1 - 1978 needs to be updated to ANSI/ANS 3.1 - 1993 provided that comparison of the two versions supports the update of the citation.
42.	Integrated Impact # 677	Updated reference to reflect that ANSI N 13.2 - 1969 was reaffirmed in 1988.
43.	Integrated Impact # 677	Updated reference to reflect that ANSI N 13.5 - 1972 was reaffirmed in 1989.
44.	Integrated Impact # 677	Updated reference to reflect that ANSI N 13.6 - 1972 was reaffirmed in 1989.
45.	Integrated Impact # 637	The reference to ANSI/ANS 3.7 - 1972 needs to be updated to ANSI/ANS 3.1 - 1989 provided that comparison of the two versions supports the update of the citation.
46.	Integrated Impact # 637	The reference to ANSI/ANS 42.3 - 1969 needs to be updated to ANSI/ANS 42.3 - 1991 provided that comparison of the two versions supports the update of the citation.
47.	Integrated Impact # 634	Replaced reference to 10 CFR part 20 §20.1(c) with 10 CFR Part 20 §20.1101(b) and the definition of ALARA in §20.1103.
48.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.101, §20.103, and §20.105 with 10 CFR Part 20 §20.1201, §20.1202, §20.1203, §20.1204, §20.1301, and §20.1302.
49.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.201 with 10 CFR Part 20 §20.1501.
50.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.201 with 10 CFR Part 20 §20.1501.

Item	Source	Description
51.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.201 with 10 CFR Part 20 §20.1501.
52.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.201 and §20.202 with 10 CFR Part 20 §20.1501 and §20.1502.
53.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.103 with 10 CFR Part 20 §20.1201, 20.1202, 20.1203, and 20.1204.
54.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.103 with 10 CFR Part 20 §20.1201, 20.1202, 20.1203, and 20.1204.
55.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.203 and §20.204 with 10 CFR Part 20 §20.1601, §20.1602, §20.1901, §20.1902, §20.1903, §20.1904, and §20.1905.
56.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.205 and 20.207 with 10 CFR Part 20 §20.1801 and §20.1906.
57.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.203 with 10 CFR Part 20 §20.1601 and §20.1602.
58.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.102, 20.201, 20.401, 20.402, 20.405, 20.407, and 20.408 with 10 CFR Part §20.1601, §20.1602, §20.2101, §20.2102, §20.2103. §20.2104, §20.1205, §20.2106, §20.2107, §20.2201, §20.2203, and §20.2306.
59.	SRP-UDP update item	Updated reference to 10 CFR Part 50, §50.(f)(2)(xxvii).
60.	SRP-UDP update item	Updated reference to 10 CFR Part 50, §50.(f)(2)(xxvii).
61.	SRP-UDP update item	Identified different types of licensing actions.
62.	SRP-UDP format item	"Technical Rationale" added to "Acceptance Criteria" subsection to describe the bases for referencing 10 CFR Part 19, §19.12, 10 CFR Part 20, and 10 CFR Part 50, GDC 64.
63.	SRP-UDP format item	Added lead-in sentence for "Technical Rationale."
64.	SRP-UDP format item	Added Technical Rationale for 10 CFR Part 19, §19.12.
65.	SRP-UDP format item	Added Technical Rationale for 10 CFR Part 20.
66.	SRP-UDP format item	Added Technical Rationale for 10 CFR Part 50, §50.34(f)(2)(xxvii).
67.	SRP-UDP format item	Added Technical Rationale for GDC 64.
68.	Current PRB names and abbreviations	Editorial change made to reflect current PRB names, Quality Assurance and Maintenance Branch, HQMB, and Human Factors Assessment Branch, HHFB.

Item	Source	Description
69.	Current PRB abbreviation	Editorial change made to reflect current PRB abbreviation, PERB.
70.	SRP-UDP Guidance, Implementation of 10 CFR 52	Added standard paragraph to address application of Review Procedures in design certification reviews.
71.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20 §20.101, §20.102, and 20.104 with 10 CFR Part 20 §20.1201, §20.1202, §20.1203, §20.1204, and §20.1207.
72.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20, §20.1(c) with 10 CFR Part 20, §20.1101 and the definition of ALARA in §20.1003.
73.	SRP-UDP update item	Updated reference to 10 CFR Part 50, §50.34(f)(2)(xxvii) and NUREG-0737 Section III.D.3.3 which provides additional detail and clarification of requirements.
74.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20, §20.203 and §20.204 with 10 CFR Part 20, §20.1601, §20.1602, §20.1901, §20.1902, §20.1903, §20.1904, and §20.1905.
75.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20, §20.103 with 10 CFR Part 20, §20.1201, §20.1202, §20.1203, and §20.1204.
76.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20, §20.102, §20.201, §20.202, §20.401, §20.402, §20.405, §20.407, and §20.408 with 10 CFR Part 20, §20.1501, §20.1502, §20.1601. §20.1602, §20.2101, §20.2102, §20.2103. §20.2104, §20.1205, §20.2106, §20.2107, §20.2201, §20.2203, and §20.2306.
77.	Integrated Impact # 634	Replaced reference to 10 CFR Part 20, §20.203 and §20.207 with 10 CFR Part 20, §20.1601, §20.1602, §20.1801, §20.1802, §20.1901, and §20.1902.
78.	SRP-UDP format item	Added reference to design certification application and combined license application.
79.	SRP-UDP format item	Added reference to design certification reviews.
80.	SRP-UDP Guidance, Implementation of 10 CFR 52	Added standard sentence to address application of the SRP section to reviews of applications filed under 10 CFR Part 52, as well as Part 50.
81.	SRP-UDP Guidance	Added standard paragraph to indicate applicability of this section to reviews of future applications.
82.	Integrated Impact # 635	Added Regulatory Guides 8.34, 8.35, 8.36, and 8.38 to subsection VI, References.

Item	Source	Description
83.	Integrated Impact # 637	The reference to ANSI/ANS 3.1 - 1978 needs to be updated to ANSI/ANS 3.1 - 1993 provided that comparison of the two versions supports the update of the citation.
84.	Integrated Impact # 677	Updated reference to reflect that ANSI N 13.2 - 1969 was reaffirmed in 1988.
85.	Integrated Impact # 677	Updated reference to reflect that ANSI N 13.5 - 1972 was reaffirmed in 1989.
86.	Integrated Impact # 677	Updated reference to reflect that ANSI N 13.6 - 1972 was reaffirmed in 1989.
87.	Integrated Impact # 637	The reference to ANSI/ANS 3.7 - 1972 needs to be updated to ANSI/ANS 3.1 - 1989 provided that comparison of the two versions supports the update of the citation.
88.	Integrated Impact # 637	The reference to ANSI/ANS 42.3 - 1969 needs to be updated to ANSI/ANS 42.3 - 1991 provided that comparison of the two versions supports the update of the citation.

Integrated Impact No.	Issue	SRP Subsections Affected
634	Revise SRP Subsections to replace citations of superseded sections of 10 CFR Part 20.	Subsection II, Acceptance Criteria, first paragraph, subitem 2. Subsection II, Acceptance Criteria, first paragraph, subitem 3. Subsection II, Acceptance Criteria, first paragraph, subitem 4. Subsection II, Acceptance Criteria, first paragraph, subitem 6. Subsection II, Acceptance Criteria, first paragraph, subitem 7. Subsection II, Acceptance Criteria, first paragraph, subitem 8. Subsection II, Acceptance Criteria, first paragraph, subitem 9. Subsection II, Acceptance Criteria, first paragraph, subitem 10. Subsection II, Acceptance Criteria, first paragraph, subitem 11. Subsection II, Acceptance Criteria, first paragraph, subitem 12. Subsection II, Acceptance Criteria, first paragraph, subitem 13. Subsection II, Acceptance Criteria, first paragraph, subitem 14. Subsection II, Acceptance Criteria, first paragraph, subitem 15. Subsection II, Acceptance Criteria, second paragraph, subitem 9. Subsection II, Acceptance Criteria, second paragraph, subitem 11. Subsection II, Acceptance Criteria, third paragraph, subitem A.

Integrated Impact No.	Issue	SRP Subsections Affected
634 (Cn't'd)	Revise SRP Subsections to replace citations of superseded sections of 10 CFR Part 20.	Subsection II, Acceptance Criteria, third paragraph, subitem A. Subsection II, Acceptance Criteria, third paragraph, subitem B.1. Subsection II, Acceptance Criteria, third paragraph, subitem B.2. Subsection II, Acceptance Criteria, third paragraph, subitem B.3. Subsection II, Acceptance Criteria, third paragraph, subitem B.4. Subsection II, Acceptance Criteria, third paragraph, subitem B.4(e). Subsection II, Acceptance Criteria, third paragraph, subitem B.5(g). Subsection II, Acceptance Criteria, third paragraph, subitem B.6(e). Subsection II, Acceptance Criteria, third paragraph, subitem B.6(f). Subsection II, Acceptance Criteria, third paragraph, subitem C. Subsection II, Acceptance Criteria, third paragraph, subitem C. Subsection IV, Evaluation Findings, third paragraph. Subsection IV, Evaluation Findings, third paragraph. Subsection IV, Evaluation Findings, seventh paragraph. Subsection IV, Evaluation Findings, seventh paragraph. Subsection IV, Evaluation Findings, seventh paragraph. Subsection IV, Evaluation Findings, ninth paragraph.

Integrated Impact No.	Issue	SRP Subsections Affected
635	Revise Acceptance Criteria to include citations of Regulatory Guide 8.25, 8.34, 8.35, 8.36, and 8.38.	Subsection II, Acceptance Criteria, second paragraph, subitem 20. Subsection II, Acceptance Criteria, second paragraph, subitem 21. Subsection II, Acceptance Criteria, second paragraph, subitem 22. Subsection II, Acceptance Criteria, second paragraph, subitem 23. Subsection VI, References, reference numbers 25 to 28.
636	Revise Regulatory Guide 8.15 to reflect respiratory protection factors in the revised 10 CFR Part 20.	Subsection II, Acceptance Criteria, second paragraph, subitem 14.
637	ANSI/ANS 3.1-1978 has been superseded by ANSI/ANS 3.1-1993, ANSI N 13.7-1972 has been superseded by ANSI N 13.7-1989, and ANSI N 42.3 1969 has been superseded by ANSI IEEE 309-1991.	Subsection II, Acceptance Criteria, second paragraph, subitem 27. Subsection II, Acceptance Criteria, second paragraph, subitem 31. Subsection II, Acceptance Criteria, second paragraph, subitem 32. Subsection VI, References, reference number 32. Subsection VI, References, reference number 36. Subsection VI, References, reference number 37.

SRP Draft Section 12.5
Attachment B - Cross Reference of Integrated Impacts

Integrated Impact No.	Issue	SRP Subsections Affected
677	ANSI N13.2 1969 has been reaffirmed as ANSI N13.2 1969 R88, ANSI N13.5 1972 has been reaffirmed as ANSI N13.5 1972 R89, and ANSI N13.6 1966 has been reaffirmed as ANSI N13.6 R89.	Subsection II, Acceptance Criteria, second paragraph, subitem 28. Subsection II, Acceptance Criteria, second paragraph, subitem 29. Subsection II, Acceptance Criteria, second paragraph, subitem 30. Subsection VI, References, reference number 33. Subsection VI, References, reference number 34. Subsection VI, References, reference number 35.
730	Revise Regulatory Guide 8.3 to reference revised version of ANSI N 13.7-1972 when comparison is completed and NRC approves.	No changes were made to SRP 2.5. IDP Form 7.0, Number 12.5-2 has been prepared.
731	Revise Regulatory Guide 8.6 to reference revised version of ANSI N 42.3-1969 when comparison is completed and NRC approves.	No changes were made to SRP 2.5. IDP Form 7.0, Number 12.5-3 has been prepared.